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ABSTRACT

The study examined the intellectual performance of 248 school age students 157 of whom were taken from public school settings. Of these, 93 were emotionally handicapped (EH) students and 64 were regular education students. The remaining subjects came from a residential school for EH children and youth (n=15) and from a summer program for academically accelerated students (n=76). Assessment measures were used that may not be as susceptible to extraneous factors as are more commonly used instruments. Measures included the Standard Progressive Matrices (SPM), reaction time evaluations, and student record reviews. Results revealed the usefulness of the SPM in clearly differentiating groups on the basis of cognitive performance. Reaction time data revealed statistically significant differences between groups. Results of file review (indicating scores on the Wechsler Intelligence Scale for Children-Revised) revealed high correlation with individual SPM scores. Findings suggested support for the possibility that intelligence may have some bearing on the diagnostic and EH placement process, despite the lack of compelling evidence to assume that intellectual ability plays an important etiological role. Treatment implications for generalization enhancing approaches are briefly noted. (CL)

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Cognitive Performance of Emotionally Handicapped Students: Predictor of School Placement?

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Cognitive Performance of Emotionally Handicapped Students: Predictor of School Placement?

Kauffman (1981), makes several tentative conclusions concerning the intellectual characteristics of disturbed children including the statement "Today, the bulk of the current literature reports findings that while the majority of mildly and moderately disturbed children fall only slightly below average in IQ, there are a disproportionate number of disturbed children (in comparison to the normal distribution) representing the dull normal and mildly retarded range of intelligence and relatively few disturbed children in the upper range of IQ" (Kauffman, 1981, p. 124-125). Such conclusions need to be drawn with care because of the imperfect nature of intelligence tests themselves, student factors such as motivation and attention, cultural difficulties and many other all too familiar impediments to accurate intellectual assessment.

The purpose of this study was to look at the intellectual performance of children diagnosed as emotionally handicapped (EH), using assessment measures that may not be as susceptible to extraneous factors as are the more commonly used instruments. Of special interest to us is the role intellectual functioning may play in the EH referral and placement process.

A literature review was conducted to determine what the conventional measures (most often the WISC and the WISC-R) were producing in terms of intellectual performance scores for disturbed children. A computer assisted search was conducted that involved three databases including Psychological Abstracts from 1968 to 1973, PsycINFO from 1974 to the present and ERIC documents since 1968. Over two hundred articles were identified as relevant to the present study, but after examination,

fewer than ten percent presented the necessary descriptive data on intelligence test performance. Those studies containing subject mean intelligence score data for the population broadly characterized as maladjusted/emotionally handicapped fell into three general categories based on subject classification. The three categories of studies were; 1) those involving public school students diagnosed emotionally handicapped, 2) studies with delinquent subjects and 3) investigations using hospital or clinic patients. While the stated purpose of these studies did not always relate to that of the present investigation, the data they contain was quite relevant. The focus of this review will be on the school program data (category 1), because it is these data that are most closely associated with our question.

Bortner & Birch (1969) reported an average WISC Full Scale score of 88.11 and a standard deviation of 20.14 for their sample of 131 EH special school students. Becker (1978) found slightly lower performance in a sample of educationally handicapped students with severe learning and emotional problems. The WISC full scale score mean was 83.2 with a standard deviation of 13.3. Studies using the WISC-R have obtained similar results. Paget (1982) for example, reported a full scale mean of 86 (SD = 14.13) with her 42 conduct disordered subjects. Schooler, Beebe & Koepke (1978) in their study involving 69 public school subjects (emotionally impaired program referrals), obtained a mean WISC-R full scale score of 89.8 and a 12.5 standard deviation. Dean (1977) reported an average WISC-R verbal score of 80.52 and an associated performance score of 94.3 from his sample of 41 conduct disordered adolescents. Taking into consideration the sample size of the studies just cited, it is possible to derive a weighted average full scale IQ score. The resulting study average was 87.32 based on a combined subject pool of 303, (see Table 1 and 2).

In addition to the school program studies, two other categories of investigations were reviewed and their results summarized. The first of these involved hospital EH inpatient or outpatient subjects. Included in this category were the following: DeHorn & Klinge (1978); Mumford (1978); Rennick (1978); Schoonover & Hertel (1970); Tigay & Kempler (1971); Turner, Mathews & Rachman (1967); and Young & Cormack (1974). The second category of studies was comprised of groups of delinquent youth and included Haynes (1982); Hecht & Jurkovic (1978); and Solway et al. (1976). The results of the individual studies discussed thus far are presented in Table 1 and the combined data from these studies are presented in Table 2. The overall performance for the three categories is rather similar and indicates test performance from one third to one full standard deviation below normal.

These studies clearly support the observation that many students selected for EH public school and day programs are functioning somewhat lower than their regular education peers, but they do not answer the question of why this is so. Is lower intellectual performance as measured by intelligence tests an accurate indication of real cognitive differences in the EH school population or are IQ scores simply depressed by such nonintellective factors as motivation, different cultural backgrounds or noncompliance during testing. A third possibility is that teachers and psychologists in educational settings may be more tolerant of emotional or behavioral problems in more academically able students or these higher ability students may be referred to less restrictive programs or interventions. The answers to these questions can have significant impact on the methods of educational service delivery to this population as well as on decisions concerning the educative interventions to be used.

METHOD

SUBJECTS

The subjects for this study were 248 school age students, 157 of whom were taken from public school settings. Of these, 93 were EH students and 64 were regular education students from one elementary and three junior high schools in a large central Arizona school district. The remaining subjects came from a residential school for emotionally handicapped children and youth (N=15), and from an out of district summer program for academically accelerated (gifted) students (N=76).

The average ages for the subject groups was 12.2 for the EH group, 11.1 for the regular education group, 13.7 for the residential EH students and 13.5 for the accelerated student group. The group of very bright students was included because it was thought that their performance on the various measures would aid us in interpreting differences that may be found between the regular and EH group.

PROCEDURE

The question stated for the present study was: Where does the EH student who is receiving special education service fall in terms of cognitive performance compared to non-emotionally handicapped/ behaviorally disordered students. In order to address some of the problems associated with conventional measures of intellectual performance, assessment was accomplished by administering a non-verbal test of reasoning, the Standard Progressive Matrices (SPM) Raven, (1938, 1956) to all study participants.

In addition, two of the study groups (accelerated students and residential EH students were given several reaction time (RT) measures using chronometric devices described in Jensen, (1982). These RT results were then compared with unpublished RT data from a regular

school sample of comparable students (N=65) collected by Carlson in an unrelated study. Jensen states that as groups vary in performance on highly "g" loaded measures of intellectual ability they will also vary on measures which are correlates of "g". Chronometric measures utilizing tasks with limited cognitive requirements have been shown to differentiate among groups selected on the basis of intellectual ability (Jensen, 1982). The Hicks paradigm, in which the subject is required to press down buttons directly below a light stimuli (see Jensen, 1982 for a complete discussion of task demands and the RT-MT apparatus), was used in this study as an alternative method of assessing each groups' performance. As such, the RT-MT data is used to validate whatever differences arise in the SPM scores between groups.

Finally, the files of the residential EH sample were reviewed to determine how well individual differences on the study measures were corroborated by program assessment data in the form of WISC-R scores contained in those subject files.

RESULTS

In spite on the age difference (in favor of the EH students), between the EH and regular education group, the EH public school group scored an average of 33 on the SPM compared to a mean of 38 for the regular education group. The residential EH sample obtained a mean SPM raw score of 32. The accelerated (gifted) group obtained a mean SPM score of 55. Adjusting for age differences and converting these scores to centile rankings taken from the SPM norms table results in a regular education mean slightly above the 60th centile, a public school EH mean at about the 25th centile and a residential EH score slightly above the 15th centile. The gifted group achieved at about the 98th centile (see Table 3). Standard deviations for these groups were similar, (9.79 for

the public school EH group, 9.47 for the regular class students and 11.38 for the residential EH group.) The distribution of the scores for these groups demonstrates the usefulness of the SPM in clearly differentiating groups on the basis of cognitive performance.

The reaction time data collected by the authors for the gifted (N=76) and residential EH (N=15) in the current study and data collected on regular education students by Carlson is presented in Table 4. These data include reaction time scores averaged over the 0 and 1 and 2 bit condition for each group along with average standard deviations, slopes and intercepts. Each of the groups differed from one another by statistically significant margins on both mean medians averaged over bits as well as on intercepts. The differences in slopes between the gifted group and the regular and EH group is also statistically significant. The difference between the regular and EH slopes is not significant and not in the expected direction. One explanation for this is the observed instability of the slope parameter obtained for the EH group. The slopes for both the gifted and the regular education sample are statistically different from zero while the EH group slope is not. Data for each bit condition for each group is presented in Table 5.

When standardized mean differences for the three groups on the SPM and the average RT scores are compared, an interesting result is brought to light. The standardized mean difference for the SPM, a highly "g" loaded test and RT (a correlate of "g") for the three groups is roughly proportional. The gifted and the EH group differ from the regular group on the SPM by 2.7 and -1.27 standard deviations respectively. They differ by -1.5 and .842 standard deviations respectively on the RT measure. The distance between the two groups remains approximately the same on both measures as would be expected

given the hypothesized relationship between "g" and RT performance scores. While EH group means were as predicted, the characteristic spread of performance often seen in the EH population was evident in the residential group in that the RT values of some individuals were as fast as the gifted group mean scores.

The file review conducted at the residential EH program produced a mean WISC-R Full Scale score of 92.46 and a standard deviation of 11.38. The range of WISC-R Full Scale scores for this group was 73 to 124. These results were highly correlated with the individual SPM scores (r=.81), and consistent with the WISC and WISC-R data presented in past studies.

CONCLUSION

The results of this study were consistent with findings of previous investigations that reported intellectual performance of emotionally handicapped students. What lends special significance to the findings are the methods of assessment that were employed. Looking at the SPM data, a consistent discrepancy appeared between groups in spite of the nonverbal and generally culture free task content. The chronometric data also reflected population differences in the predicted direction although the small EH sample size and large subject variation in this group made interpretation more difficult. In general, the results of these unconventional measures were consistent with the more traditional measures of intellectual status.

The purpose of this study was to investigate the role of intellectual factors in emotional handicapping conditions in general and in the EH selection and placement process in particular by reviewing past studies that reported test scores for this population

and by conducting assessment with instruments less dependent on prior learning or influenced by affective states. The findings suggested support for the possibility that intelligence may have some bearing on the diagnostic and EH placement process but even though the EH group scores, on average, are substantially below those of their regular education peers there is no compelling reason to assume that intellectual ability plays an important etiological role. On the other hand, there is reason to believe that the complex referral systems that deliver children to special programs operate with some degree of bias related to the cognitive status of those children.

Perhaps more important than the etiological question or even the placement question are the treatment implications associated with below average intellectual performance in the EH group. Highly structured and situation specific learning approaches that focus on behavioral compliance and rote mastery of basic academics at the expense of generalization are often the treatment of choice when working with this population. If it is true that a disproportionate number of children diagnosed EH are functioning within the dull normal range of intelligence, these approaches made only succeed in allowing the child to become more dependent on the controlling circumstances of the structured environment.

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Table 1
Detail of Cited Studies

Study	N	Mean Age or Range	FSIQ	SD
SCHOOL				
Bortner & Birch	131	8.84	88.11	20.14
Becker	20	10.80	83.20	13.30
Dean	41	14.39	84.00(A)	(B)
Paget	42	10.11	86.00	14.13
Schooler et al.	69	10.80	89.80	12.50
Total	303		87.32	
HOSPITAL				
DeHorn & Klinge	100	14.20	90.59	17.39
Mumford	20	11.45	87.50 (WISC-R) 92.50 (WISC)	
Rennick	14	8.93	95.64	15.36
Schoonover & Hertel	269(C)	5.1 to 15.11	96.45	
Tigay & Kempler	25	7.5 to 12.90	89.84	
Turner et al.	26	12.1	110.00	12.39
Young & Cormack	78	6.2 to 11.00	95.74	11.67
Total	532		95.33	
DELINQUENT				
Haynes	100	12.1 to 16.11	91.33	12.87
Hecht & Jurkovic	20	(D)	87.00(E)	
Solway et al.	180 185		79.57 (WISC-R) 84.74 (WISC)	
Total	485		84.27	

(A) extrapolated from mean verbal and performance scores
(B) not available
(C) brain injured and mentally retarded groups were excluded from the Schoonover and Hertel data for the purposes of this analysis
(D) not available
(E) extrapolated from mean verbal and performance scores

Table 2

Combined mean WISC and WISC-R Full Scale Scores for Studies Cited in Text

Study Category	Studies	Total N	Age Range	Mean FSIQ
school group	5	303	7 to 15	87.32
clinic group	8	506	5 to 16	95.33
delinquent group	3	485	12 to 16	84.27

Table 3
Mean Standard Progressive Matrices Scores by Group

Classification	N	X age	X SPM score	X centile score
public school EH	93	12.2	33	25th
public school Reg.	64	11.1	38	60th
residential EH	15	13.3	32	15th
gifted	76	13.5	55	98th

Table 4
Mean Medians, Slope and Intercepts for Gifted, Regular and Emotionally Handicapped Students

Group	N	X Median	STD	Slope	Intercept
Gifted	76	342.05	37.36	20.18	321.06
Regular (Carlson)	65	431.65	78.06	53.30	378.35
EH	15	492.33	104.78	46.83	445.50

Table 5
RT for Bit Condition by Group

GROUP	RT0	RT1	RT2	AVE.	I
GIFTED					
	321.66	340.86	363.63	342.05	321.05
	34.96	34.57	42.54	37.36	20.98
REGULAR					
	373.13	442.10	479.73	431.65	378.35
	81.60	70.51	82.01	78.06	53.30
EH					
	449.50	484.33	543.17	492.33	445.50
	108.92	101.73	103.70	104.78	46.83

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